

## Claims

[c1] 1. A capacitive semiconductor pressure sensor comprising:

a non-single-crystal-silicon-based substrate;

a conductive movable polysilicon diaphragm;

a polysilicon supporter positioned on the non-single-crystal-silicon-based substrate for fixing two ends of the polysilicon diaphragm and forming a sealed cavity between the polysilicon diaphragm and the non-single-crystal-silicon-based substrate;

a stationary electrode positioned on the non-single-crystal-silicon-based substrate and below the polysilicon diaphragm, the stationary electrode and the polysilicon diaphragm constituting a plate capacitor; and

a thin film transistor (TFT) control circuit positioned on the non-single-crystal-silicon-based substrate and electrically connected to the plate capacitor.

[c2] 2. The capacitive semiconductor pressure sensor of claim 1 wherein the non-single-crystal-silicon-based substrate is a glass substrate.

[c3] 3. The capacitive semiconductor pressure sensor of claim 2 wherein the TFT control circuit is a low temperature

polysilicon TFT control circuit.

- [c4] 4.The capacitive semiconductor pressure sensor of claim 1 wherein the non-single-crystal-silicon-based substrate is a quartz substrate.
- [c5] 5.The capacitive semiconductor pressure sensor of claim 4 wherein the TFT control circuit is a high temperature polysilicon TFT control circuit.
- [c6] 6.The capacitive semiconductor pressure sensor of claim 1 wherein the stationary electrode comprises aluminum (Al), titanium (Ti), platinum (Pt), or alloys.
- [c7] 7.The capacitive semiconductor pressure sensor of claim 1 wherein the polysilicon diaphragm and the polysilicon supporter are formed simultaneously.
- [c8] 8.The capacitive semiconductor pressure sensor of claim 1 wherein the polysilicon diaphragm is a doped polysilicon diaphragm.
- [c9] 9.The capacitive semiconductor pressure sensor of claim 1 wherein the non-single-crystal-silicon-based substrate further comprises a thin film transistor display region for displaying a variation of pressure detected by the capacitive semiconductor pressure sensor.
- [c10] 10.A capacitive semiconductor pressure sensor compris-

ing:  
an insulating substrate;  
a conductive movable diaphragm;  
a supporter positioned on the insulating substrate for fixing two ends of the diaphragm and forming a sealed cavity between the diaphragm and the insulating substrate;  
a stationary electrode positioned on the insulating substrate and below the diaphragm; and  
a control circuit electrically connected to the diaphragm and the stationary electrode.

- [c11] 11. The capacitive semiconductor pressure sensor of claim 10 wherein the stationary electrode comprises aluminum (Al), titanium (Ti), platinum (Pt), or alloys.
- [c12] 12. The capacitive semiconductor pressure sensor of claim 10 wherein the diaphragm and the supporter are formed simultaneously.
- [c13] 13. The capacitive semiconductor pressure sensor of claim 12 wherein the supporter comprises polysilicon.
- [c14] 14. The capacitive semiconductor pressure sensor of claim 13 wherein the diaphragm comprises a doped polysilicon.
- [c15] 15. The capacitive semiconductor pressure sensor of

claim 10 wherein the diaphragm comprises a conductive material.

- [c16] 16. The capacitive semiconductor pressure sensor of claim 10 wherein the insulating substrate is a glass substrate.
- [c17] 17. The capacitive semiconductor pressure sensor of claim 16 wherein the control circuit is positioned on the glass substrate and the control circuit comprises a low temperature polysilicon thin film transistor control circuit.
- [c18] 18. The capacitive semiconductor pressure sensor of claim 10 wherein the insulating substrate is a quartz substrate.
- [c19] 19. The capacitive semiconductor pressure sensor of claim 18 wherein the control circuit is positioned on the quartz substrate and the control circuit comprises a high temperature polysilicon thin film transistor control circuit.
- [c20] 20. The capacitive semiconductor pressure sensor of claim 10 wherein the control circuit is positioned on a printed circuit board (PCB) and is electrically connected to the stationary electrode and the diaphragm via a flexible printed circuit (FPC) board.

- [c21] 21. The capacitive semiconductor pressure sensor of claim 10 wherein the control circuit is positioned on a flexible printed circuit (FPC) board, the control circuit being electrically connected to the stationary electrode and the diaphragm via the flexible printed circuit board.
- [c22] 22. The capacitive semiconductor pressure sensor of claim 10 wherein the insulating substrate further comprises a thin film transistor display region for displaying a variation of pressure detected by the capacitive semiconductor pressure sensor.